and 11.7%, respectively. Age had a significant influence on survival and on time to the first tumor progression, whereas extent of surgery in the initial therapy did not.
Conclusion. We conclude that these patients can expect a median survival of over 2 years and that young age have a positive influence on survival, and that salvage therapies can extend survival after the onset of tumor progression for nearly a year.

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First-line treatment of malignant glioma with carmustine implants. Seven years-results

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Patients and methods. We have analyzed the clinical course of 49 patients who underwent initial microsurgery tumor resection and implantation carmustine-containing wafers into the resection cavity. Time period ranged from 2003 to 2012. Forty-nine were included (18 females and 31 males) with a mean age of 53.3 years. First symptom mots common: motor impairment 49.9%. Histology was confirmed as glioblastoma in 91.8%, anaplastic astrocytoma, 6.1%. Karnofsky performance status (KPS) was 100 in 73.5%, 90 in 22.4% and 80 in 4.1%. Surgery was reported as gross total resection in 85.7% and parcial resection in 14.3%. 46.2% of patients were treated using carmustine wafers followed by standard radiotherapy (RT) with concomitant and adjuvant temozolomide (TMZ); 51.3%, carmustine wafers and RT with adjuvant TMZ; 2.6%, carmustine wafers and RT with concomitant TMZ. 45.8% patients do not completed treatment. Reasons for discontinuation were progression (86.4%) and adverse events (13.6%).
Results. After a median follow-up of 84 months, 81.3% progressed and 83.3% died. One, two and three year OS rates were 60.5%, 21.3%, 13.3% respectively, and four, five, six and seven year rates were 10.7%. Mean OS was 21.83 months (95% CI, 14.9–28.8) and median OS was 15 months (95% CI, 11.8–18.2). One, two, three year PFS rates were 30.8%, 5.1%, 2.6% respectively, and four, five, six and seven year rates were 0%. Mean PFS was 11 months (95% CI, 8.2–13.7) and median PFS was 8 months (95% CI, 4.9–11). Subgroup analyses for know clinical prognostic factors demonstrated prolonged OS in patients younger than 60 years and who had KPS 100 and the PFS was significant in KPS 100.
Conclusion. The use of carmustine wafers with radiation and concomitant and adjuvant TMZ does not appear to result in new types of adverse events. A better outcome was seen in patients younger than 60 years and who had KPS 100.

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Geometrically simple technique for craniospinal irradiation

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Introduction. Craniospinal irradiation is the standard treatment of some central nervous system tumors. The main difficulty of this irradiation arises by the length of the region to be irradiated, which requires the use of several isocenters, with the problem of the junction field, the use of direct fields and source-surface distance (SSD) differently to standard.
Objective. Description of a radiotherapy planning technique for craniospinal irradiation that eliminates some of the problems of conventional techniques.
Methods. We place the patient in prone position, with a thermoplastic mask and a vacuum mattress. The treatment planning includes two or three isocenters (lumbar, thoracic and cervical). Initially lumbar isocenter is positioned at a 100 cm SSD, using for this zone 3 beams (anteroposterior and 2 oblique). Then the isocenter cervical is positioned and finally dorsal isocenter by anteroposterior field, with the table and the collimator rotated to 90°, following the divergence of the lumbar and brain beams. Finally the brain area is treated by two opposing lateral beams, with collimator rotation. We made a direct treatment planning by step-and-shoot, optimized by the algorithm of Pinnacle DMPO (own planning process of our Service).
Results. When we compared with standard techniques, less dose is administered in the abdominal area, increasing the dose in the mouth, but within tolerable limits. The dose-volume histogram (HDV), are similar to the tomotherapy treatments.
Conclusions. Our craniospinal irradiation technique has some advantages of standard treatment and some disadvantages are improved (dose reduction in risk organs, standard SSD), making it a relatively easy alternative to the completion and improvement of this treatment.

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Glioblastoma multiforme treatment: 163 patients experience

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Introduction. Glioblastoma multiforme (GBM) is the most common primary brain tumor in adults, is an aggressive malignancy with a poor outcome. Current standard of care for newly diagnosed GBM includes trimodality treatment (Surgery, concomitant Radiotherapy and Chemotherapy).
Objective. The aim of this study was to investigate if the demonstrated improved survival in the literature is translated to clinical practice.
Materials and methods. This is a retrospective study between June 1996 and February 2013 that includes 163 patients with GBM. Median age 62 years (24–87); 102 male (62.6%) and 61 female (37.4%); 63 patients (38.6%) received 2DCRT and 100 (61.4%) were treated with 3DCRT. Performance status (PS-ECOG) 0 = 7.4% of the patients; 1 = 39.9%; 2 = 33.7%; 3 = 13.7%; 78 patients (47.9%) had complete tumor resection, 59 (47.6%) incomplete resection and 18 (11%) received only biopsy; 147 patients (93%) received chemotherapy, BCNU in 26 patients, Temozolamide (TMZ) concomitant in 12, TMZ concomitant and adjuvant 109. The Temporal lobe (41.4%), right hemisphere (52.5%), unilobar localization (66.9%) were the most common sites affected. For survival analysis patients were stratified by age, ECOG, and treatment modalities.
Results. The mean overall survival (mOSV) was 19.7 months (95% CI: 16.4–23.0); and mean progression-free survival (mPFSV) was 13.3 months (95% CI: 9.8–16.7) for the whole group. At 1 year mOSV was 54%, 2 years 25%, 3 years 13%, 4 years 10% and 6% at 5 years. The mPFSV at 1 year was 32%, 2 years 11%, 3 years 8%, 4 years 3% and 1% at 5 years. Factors identified as predictors of better overall survival (OS) were: extent of resection ($p = 0.000$ Log Rank); ECOG 0 vs. 1–3 ($p = 0.031$ Long Rank) and type of chemotherapy TMZ vs. BCNU ($p = 0.006$ Log Rank). On the other hand: 3DCRT vs. 2DCRT ($p = 0.644$ Long Rank), Sex ($p = 0.79$ Long Rank), and age of diagnosis ($p = 0.351$ Long Rank), were not factors predictors of OS in our retrospective study.
Conclusions. Complete resections, TMZ associated with 3DCRT, ECOG 0 younger patients significantly improve survival.

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Glioblastoma multiforme: IMRT versus 3DCRT reirradiation in two patients

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Introduction. The reirradiation of a local relapse remains nowadays a challenge for the tumor control of patients diagnosed with Glioblastoma Multiforme (GBM). It is not unusual that patients receive QT-RT after a surgical resection, with the underlying effects, what makes even more difficult to design the proper treatment for the patient, due to the previous treatments.
Objectives. To compare the different PTV coberture in the different planning techniques in two different patients: one treated with 3DCRT versus another patient treated with IMRT.
Methods. Two patients diagnosed with a relapse of GBM, underwent Radiotherapy after a surgical resection of the tumor failure, previously treated with QT-RT (Temozolamide plus 60 Gy with 3DCRT) after surgical resection. Patient A: 24 year-old patient received a total dose treatment of 37.5 Gy, delivered in 15 sessions of 2.5 Gy per fraction with 3DCRT. Patient B: 41 year-old patient received a total dose treatment of 36 Gy, delivered in 20 sessions of 1.8 Gy per fraction with IMRT.
Results. Patient A: Radiation Technique: 3DCRT V95: 99.94%/V100: 78.82% D95: 36.7 Gy/D100: 35.35 Gy/Tronco: Dmáx: 5 Gy, Dmedia: 1.16 Gy Vías ópticas: Dmáx: 1.2 Gy, Dmedia: 1 Gy Patient 2: Radiation Technique: IMRT V95: 99.97%/V100: 91.05% D95: 35.65%/D100: 33.67%/Tronco: Dmáx: 35.07%, Dmedia: 19.91 Gy Vías ópticas: Dmáx: 13.72 Gy/Dmedia: 11.3 Gy.
Conclusions. We conclude that, although the planning comparison is between two different patients, the IMRT achieved a better PTV coberture than 3DCRT with a good sparing of the OARs and eloquent areas.

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Glioblastoma Multiforme: Reirradiation planning techniques comparison in the same patient

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Introduction. Nowadays, patients diagnosed with Glioblastoma Multiforme (GBM) can be treated with different radiotherapy techniques depending on the available technology of each radiation oncology department.
Objectives. To analyse the best treatment option with radiotherapy on a patient with several tumor control failures, previously treated with surgery, surgery plus QT-RT and a new scheme of surgery plus QT-RT.
Methods. A 41-year-old patient diagnosed with GBM in 2003, who was operated with R0 without adjuvant treatment. Five years later, the patient underwent a second surgery for a local relapse. Adjuvant treatment with QT-RT was delivered (Temozolamide